

AMENDMENTS TO THE CLAIMS

Please cancel Claims 25-32 without prejudice, as shown below. This listing of claims will replace all prior versions, and listings, of claims in the application:

LISTING OF CLAIMS:

1. (previously presented) A device for providing environmental stability and mechanical integrity in space, the device comprising:
 - a substrate;
 - a first silicon oxynitride layer on the substrate, the first silicon oxynitride layer having an overall tensile stress in a range from 0.01 MPa to 1 MPa;
 - a second silicon oxynitride layer on the first silicon oxynitride layer, the second silicon oxynitride layer having an overall compressive stress.
2. (previously presented) The device of claim 1 is free from delamination and cracking of the first silicone oxynitride layer and free from delamination and cracking of the second silicon oxynitride layer after at least 60 hours under a first UV radiation in a first vacuum condition.
3. (original) The device of claim 2 wherein the first UV radiation has a first UV intensity equal to a second UV intensity of a second UV radiation received by a spacecraft in space.

4. (original) The device of claim 3 wherein the first vacuum condition has a first vacuum pressure ranging from 1×10^{-6} torr to 1×10^{-3} torr.
5. (original) The device of claim 1 is free from delamination and cracking of the first silicon oxynitride layer and free from delamination and cracking of the second silicone oxynitride layer after at least 3000 hours under a third UV radiation and a first electron and proton bombardment in a second vacuum condition.
6. (original) The device of claim 5 wherein the first electron and proton bombardment has a first electron and proton intensity equal to a second electron and proton intensity received by a spacecraft in space.
7. (original) The device of claim 6 wherein the third UV radiation has a third UV intensity equal to a fourth UV intensity of a fourth UV radiation received by the spacecraft in space.
8. (original) The device of claim 7, wherein the second vacuum condition has a second vacuum pressure ranging from 1×10^{-12} torr to 1×10^{-7} torr.
9. (cancelled)
10. (previously presented) The device of claim 1 wherein the compressive stress ranges from 10 MPa to 100 MPa.

11. (previously presented) The device of claim 1 wherein the substrate comprises at least one selected from a group consisting of polymer, ceramic, carbon composite, Kapton, black Kapton, aluminum, aluminum alloy, silver, gold, platinum, and titanium.

12. (previously presented) The device of claim 1 wherein the first silicon oxynitride layer comprises SiO_xN_y , x ranging from a number greater than 0 to 2, y ranging from a number greater than 0 to 4/3.

13. (previously presented) The device of claim 12 wherein the second silicon oxynitride layer comprises SiO_xN_y , x ranging from a number greater than 0 to 2, y ranging from a number greater than 0 to 4/3.

14. (canceled)

15. (canceled)

16. (previously presented) A device for providing environmental stability and mechanical integrity in space, the device comprising:

a substrate;

a silicon oxynitride coating layer on the substrate, the silicon oxynitride coating layer having a changing stress, the changing stress being overall compressive on a top surface of the silicon

oxynitride coating layer and overall tensile on a bottom surface of the silicon oxynitride coating layer,

wherein the silicone oxynitride coating layer comprises at least a first coating sub-layer and a second coating sub-layer, the second coating sub-layer on the first coating sub-layer, the second coating sub-layer having the compressive stress, the first coating sub-layer having the tensile stress,

wherein the first coating sub-layer has a first thickness ranging from 5 microns to 35 microns.

17. (previously presented) The device of claim 16, wherein the substrate comprises at least one selected from a group consisting of polymer, ceramic, carbon composite, Kapton, black Kapton, aluminum, aluminum alloy, silver, gold, platinum, and titanium.

18. (original) The device of claim 17, wherein the substrate comprises a reflective layer, the reflective layer reflecting solar radiation.

19. (original) The device of claim 17 wherein the substrate comprises at least one selected from a group consisting of silver, aluminum, gold, platinum, and titanium.

20. (canceled)

21. (canceled)

22. (previously presented) The device of claim 16 wherein the second coating sub-layer has a second thickness ranging from 0.5 microns to 5 microns.

23. (original) The device of claim 22 wherein the first thickness equals 19.5 microns.

24. (original) The device of claim 23 wherein the second thickness equals 2.5 microns.

25 to 32. (cancelled)